



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/579,528

02/27/2007

Tony Albrecht

5367-239PUS

8420

27799

7590

11/04/2008

COHEN, PONTANI, LIEBERMAN & PAVANE LLP
551 FIFTH AVENUE
SUITE 1210
NEW YORK, NY 10176

EXAMINER

NGUYEN, PHILLIP

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

11/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,528	Applicant(s) ALBRECHT ET AL.	
	Examiner PHILLIP NGUYEN	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-19 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-4, and 6-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not provide any additional information from what is claimed in claim 7. Therefore, one skill in the art will not be enabled to understand how the conductive layer is arranged vertically with respect to the pump layer and emitter layer as recited in claim 1.

Art Unit: 2828

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 8, 11-13, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Jiang et al. (US 2003007538).

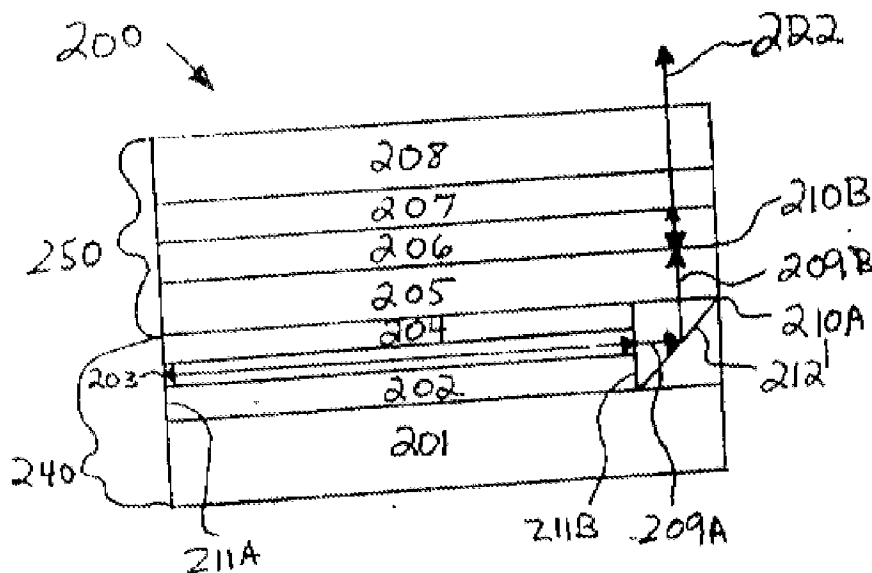


FIG. 2

With respect to claim 1, Albrecht discloses in Fig. 2 (as shown above) a semiconductor laser device 200 comprising:

an optically pumped surface-emitting vertical emitter region 250 which has an active radiation-emitting vertical emitter layer 206;

Art Unit: 2828

at least one monolithically integrated pump radiation source 240 for optically pumping the vertical emitter 250, which has an active radiation-emitting pump layer 203, wherein the pump layer follows the vertical emitter layer in the vertical direction and a main direction of pump radiation from the monolithically integrated pump radiation source is lateral;

a conductive layer 204 provided between the vertical emitter layer 206 and the pump layer 203; and a contact 201/204 applied on the side of the semiconductor laser device which is closer to the pump layer than to the conductive layer;

whereby an electrical field can be applied between the conductive layer and the contact for generating pump radiation by charge carrier injection.

It's noted that the in paragraph 0017, Jiang further discloses "the substrate 201 or cladding layer 202 may act as the contact layer for making one of the electrical contacts for the electrically pumped in-plane semiconductor laser." The contact 201/204 is located on the bottom/lower side of the pump layer. It's further noted that in claim 13, applicant also use the term "on the side opposite the substrate" to explain the position of the radiation generated by the vertical emitter layer.

With respect to claim 2, Fig. 2 illustrates the semiconductor laser device 200 being partially ablated in the region of beam steering element so that the beam steering element can be placed in that area replacing the ablated portion.

With respect to claim 4, since the claim fail to define "a further contact" to be an electrical contact which is applied to the exposed areas of the conductive layer, it is Examiner's position to interpret that the facet 211B to be that "further contact."

Art Unit: 2828

With respect to claim 8, DBR 205 is considered as a vertical waveguide structure which is provided between the vertical emitter layer 206 and the conductive layer 204.

With respect to claims 11-12, DBR 205 is again considered as an internal cavity reflective surface.

With respect to claim 13, Fig. 1 shows the internal cavity reflective structure 205 being arranged between the vertical emitter layer 206 and a substrate 201 and the radiation generated by the vertical emitter layer is launched on the side of opposite the substrate.

With respect to claims 18, see paragraph 0017.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (US 2003007538) in view of Chua et al. (US 20030067009). Jiang discloses the claimed invention except for the semiconductor laser device being ablated in the form of parallel trenches. Chua discloses in Fig. 1b a VCSEL that has an ablated region in the form of parallel trenches 110. It would have been obvious to one skill in the art at the time the invention was made to provide

Art Unit: 2828

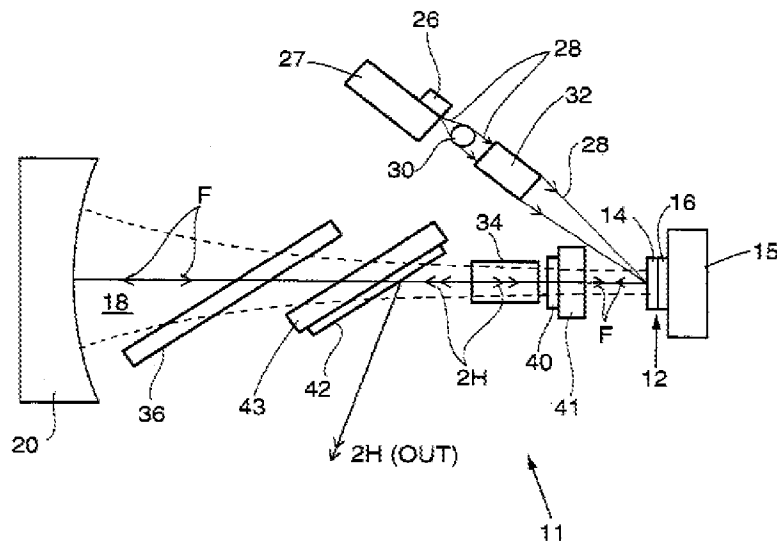
parallel trenches as taught by Chua in order to oxidize the layer inside of the VCSEL to change its refractive index.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (US 2003007538).

With respect to claim 6, Jiang discloses the claimed invention except for an etch stop layer. It would have been obvious to one skill in the art at the time the invention was made to provide an etch stop layer in order to control the etching process because it has been well known in the art.

With respect to claim 7, although Jiang does not explicitly teach the conductive layer 204 located in a node of the radiation field in the resonator of the vertical emitter region, it is well known to locate the quantum well layers in the peak location of the standing wave and other layer such as the conductive layer in the node so minimize the loss of the radiation in the cavity.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (US 2003007538) in view of Spinelli (US 6370168).

**FIG. 2**

Jiang discloses the claimed invention except for the vertical emitter being associated with an external resonator reflector which together with the internal cavity reflective structure, forms a resonator for the vertical emitter region, beam-shaping elements, frequency-selective elements, and frequency-converting elements are arranged in the resonator. Spinelli discloses a VCSEL as shown in Fig. 2 with an external cavity including an external resonator mirror 20, and frequency-converting element 34, frequency selecting elements 36, 40, 42.

It would have been obvious to one skill in the art at the time the invention was made to provide an external resonator reflector and the listed components inside the resonator because it has been known in the art to use an external resonator to obtain desired laser light through the optical elements such as optical lens, grating, frequency converting elements like nonlinear crystals as taught by Spinelli.

Art Unit: 2828

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (US 2003007538) in view of Cunningham (US 6434180). Jiang discloses the claimed invention except for the quantum well structure containing at least one of quantum troughs, quantum wires, or quantum dots. Cunningham discloses a similar semiconductor laser having quantum dots (col. 6, 43-54). It would have been obvious to one skill in the art at the time the invention was made to provide quantum dots for the quantum well as taught by Cunningham because it is well known in the art to use quantum dots or quantum wires for the quantum wells.

Allowable Subject Matter

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2828

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phillip Nguyen/

AU 2828

/Minsun Harvey/

Application/Control Number: 10/579,528

Page 10

Art Unit: 2828

Supervisory Patent Examiner, Art Unit 2828